

Tenth Street Bridge  
Spanning the Missouri River  
Great Falls  
Cascade County  
Montana

HAER No. MT-8

HAER  
MONT,  
7 - GREFA,  
2 -

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
National Park Service  
Department of the Interior  
Washington, D.C. 20240

ADDENDUM  
PAGES...

HISTORIC AMERICAN ENGINEERING RECORD

Tenth Street Bridge

MT-8

HAER  
MONT,  
7-GREFA,  
2-

Location: Spanning the Missouri River on Tenth Street, in Great Falls, Cascade County, Montana.

Date of Construction: 1920

Present Owner: Cascade County  
Cascade County Courthouse  
Great Falls, Montana 59401

Present Use: Vehicular Bridge

Significance: The Tenth Street Bridge crossing the Missouri River in Great Falls consists of eight concrete open spandrel arches each 141 feet, 3 inches long and 38 feet wide. The structure was designed by Ralph Adams of Spokane, Washington and George H. Shanley of Great Falls and was constructed in 1920 by Porter Brothers of Spokane, Washington. Each span rests on concrete piers, has two concrete arch ribs and thirteen concrete spandrel arches. The roadway is 29 feet, 6 inches wide and consists of reinforced concrete tee-beams. Originally built to carry both highway and trolley traffic, the steel trolley pole and wire have since been removed. The sidewalk, supported by reinforced concrete corbels is 7 feet, 6 inches wide. The original lamposts, handsomely constructed with cast iron, have also been removed. Because the bridge was built to accommodate trolley as well as highway traffic, one quarter of the \$223,100 construction contract was paid by the Montana Power Company, owner of the Great Falls Street Railway Company. Trolleys ceased operation in Great Falls in 1931. The bridge is very similar to the recently demolished First Ave. North Bridge. The 1130-foot Tenth Street Bridge is the longest multi-arch, open spandrel concrete arch bridge in Montana. It is also the oldest open spandrel concrete arch bridge in the State, being completed shortly before the Carter Bridge in Park County. However, the three-span barrel arch bridge at Fromberg in Carbon County, built in 1914, is the oldest multi-arch concrete bridge in Montana.

Transmitted by:

Kevin Murphy, Historian HAER, 1984; from data compiled by Fredric L. Quivik, 1979

Addendum to:

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Cascade County  
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Historic American Engineering Record  
Rocky Mountain Regional Office  
National Park Service  
U.S. Department of the Interior  
P.O. Box 25287  
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

HAER  
MONT  
7-GREFA/  
2-

Tenth Street Bridge

HAER No. MT-8

This is an addendum to a 1 page report previously transmitted to the Library  
of Congress.

**Location:** The Tenth Street Bridge spans the Missouri River in north Great Falls. It lies on the former route of U.S. Highway 87 which connected Great Falls with Black Eagle and other communities to the north

UTM: Zone 12.478195 E 5262840 N  
Quad: Northwest Great Falls, 1965

**Date of Construction:** 1920

**Designer:** Toltz Engineering Company

**Builder:** Porter Brothers Company of Spokane, Washington

**Present Owner:** Cascade County  
Cascade County Courthouse  
Great Falls, Montana 59401

**Present Use:** Vehicular bridge

**Previous Research:** This documentation is an addendum to a single-page report transmitted to the Library of Congress in 1984.

**Significance:** The Tenth Street Bridge is of engineering significance as the longest multi-arch, open spandrel, concrete arch bridge and the oldest span spandrel, concrete arch bridge in Montana. Its historic significance arises from the important role it played in the development of Great Falls' system of roads and streets. The Tenth Street Bridge, and the First Avenue North Bridge, which was built at the same time, provided critical transportation connections within the city and between it and outlying rural communities.

**Historian:** Mitzi Rossillon  
Renewable Technologies, Inc.  
Butte, Montana

April 1992

## II. HISTORY

### A. Need for the Bridge

The city of Great Falls, incorporated in 1888, grew rapidly during the first two decades of the twentieth century, becoming the largest agricultural and industrial center in northern Montana. the dryland farming homestead boom was largely responsible for Great Falls' status as an important agricultural center. Agriculture-related facilities constructed in the city between 1900 and 1920 included "the largest packing plant between St. Paul and the coast and two large flouring mills with a daily capacity of 5,100 barrels." [1] Industrial development during this same period involved construction of two hydroelectric facilities just east of the city with a combined capacity of 86,000 kilowatts, and transformation of the Boston and Montana smelter at Black Eagle at the north edge of the city into the Anaconda Copper Mining Company's copper concentrate refinery with associated zinc, copper wire, and ferro-manganese plants. [2] The growth in agricultural and industrial enterprises boosted the city's population from almost 14,000 in 1910 to an estimated 38,000 in 1916. [3]

In response to the city's booming economy, building construction flourished and the infrastructure was in a constant state of improvement. The development and maintenance of modern streets and roads were among the most important matters discussed by the Great Falls City Council and the Cascade County Board of Commissioners between 1900 and 1920.

As early as June 1916, concerned citizens of Great Falls approached the Cascade County Board of Commissioners about the need for a new bridge at the First Avenue North location. [4] (The history of the Tenth Street Bridge is intimately tied to that of the First Avenue North Bridge which also crossed the Missouri River, 1.4 miles upstream from the former. The two were built at the same time, by the same builders, and according to essentially the same design.) The original, multi-span, metal truss bridge at First Avenue North had been built in 1888 [5] and, although fit for traffic, was closed to engined vehicles and was in constant need of repair, primarily due to its wood deck. [6] The commissioners refused to consider the matter of new bridge construction, noting that state law prohibited the use of county funds on projects within incorporated city limits. [7]

Shortly thereafter, the poor condition of the Fifteenth Street Bridge, 1.8 miles below the First Avenue Bridge, was brought to the attention of the county commissioners and the Montana State Highway Commission (SHC). This bridge, built in 1891, was the only other crossing of the Missouri River at Great Falls, excepting railroad bridges. [8]

Representatives of concerned Great Falls residents again approached the county commissioners about the First Avenue Bridge in February 1917. Their cause was likely bolstered by state legislation approved the previous month which 1) gave counties the authority to build within city limits and 2) required that street railway companies pay between one-fourth and one-half the costs of construction and maintenance for bridges which carried their lines. [9] The timing and wording

of 1917 state legislation regarding "Bridges Within Incorporated Towns" suggest that concerned citizens may have carried their desire for a new bridge in Great Falls to the state legislature.

By May 1917, the Montana Power Company, owner of the Great Falls Street Railway Company, agreed to pay \$50,000 toward construction of the First Avenue North Bridge, under the provision that it would be allowed franchises for use of both the First Avenue Bridge and another bridge to be built somewhere "on the North Side." [10] This agreement documents the fact that the commissioners were considering a second new bridge across the Missouri at least as early as the spring of 1917.

Perhaps the most ardent supporter of the First Avenue North and Tenth Street bridge projects was the Great Falls Commercial Club. Formed at least as early as 1913, the group was apparently an equivalent of the modern-day Chamber of Commerce. [11] It regularly attended meetings of the Cascade County Board of Commissioners to request new bridges at First Avenue North and "on the North Side." [12] Great Falls' founding father, Paris Gibson, usually represented the Commercial Club before the Board of Commissioners. When the club formed an official bridge committee, which advised the board of all matters of the two bridge projects from design features to selection of the "North Side" bridge location, Gibson was a member of that committee. The other members were O. S. Warden, secretary and manager of the Great Falls Tribune, and B. J. Boorman, president and manager of the Boorman Lumber Company. [13]

At the end of July 1917, the commissioners conducted an on-site visit of Great Falls' north side to consider the location of the second new bridge. Although the Fifteenth Street Bridge was in such poor condition that the county surveyor recommended condemnation one year earlier, the commissioners were not considering a new bridge at that location, but instead favored a bridge at Ninth or Thirteenth Street. [14] Within a month, the Great Falls Tribune identified the Ninth/Tenth Street location as the one of choice. [15]

In November, the city of Great Falls agreed to assume financial responsibility for construction of both approaches to the First Avenue North Bridge and the south approach to the Tenth Street Bridge, all of which lay within city limits. For the latter structure, the south approach was estimated to cost \$15,000, even though it would require grade separations at the Great Northern Railway and the Chicago, Milwaukee, and St. Paul Railway tracks.

#### B. Design and Construction Chronology

Also in the fall of 1917, the State Highway Commission (SHC) contacted the Toltz Engineering Company of St. Paul, Minnesota, with a request to develop plans for the two bridges, to be completed by June 1 of the following year. Toltz agreed to perform the work. [17]

On February 9, 1918, the SHC entered into a formal agreement with the Cascade County commissioners concerning construction of the First Avenue North and Tenth Street bridges. [18] As was the regular procedure in bridge construction in Montana at the time, the SHC agreed to provide the plans (in this case, by way of a consulting engineer) to the county, which would

in turn be responsible for the construction costs. The SCH would also provide a resident engineer to supervise construction of the two structures. [19]

While Toltz proceeded with the design of the bridges, the county scheduled a special election at which voters decided if the county should issue bonds for construction of either or both of the bridges, bonds in the amount of \$243,000 for the First Avenue North Bridge and \$224,000 for the Tenth Street Bridge. [20] The bond issue passed and, on July 10, 1918, the commissioners sold the bonds to the Wells-Dickey Company of Minneapolis. [21] Toltz submitted its plans to the SHC around that time, and shortly thereafter the county advertised for bids for the two bridges. [22]

The Board of Commissioners opened the bids for construction of the First Avenue North and Tenth Street bridges on September 16, 1918; it rejected all bids because they exceeded the funds available for the construction projects. [23] This turn of events was a serious blow to the rapid progress that had been made heretofore on the bridge projects. As it turned out, it put the construction schedule back almost a year from what was first planned.

It was not until April of the following year that the board made progress toward obtaining designs for bridges which could be built with the available monies. In an unusual move, the board announced a design competition whereby companies could submit designs, and the selected design would be purchased by the board. Companies submitting unselected designs would not be compensated for their efforts. [24] Five different plans were submitted to the county commissioners in May, and two of them, those of Ralph Adams and George Shanley and of the Luten Engineering Company, were accepted. Bridge contractors would have the opportunity to bid on either of the designs, and the designer of the plans, which were actually used, would receive \$1,000. [25]

On August 25, 1919, the county commissioners received and opened bids from three companies for the bridge construction projects. They awarded the contract for both bridges to the Porter Brothers Company of Spokane, Washington, for \$462,000--the lowest bid for both bridges. The firm proposed to build according to Adams and Shanley's design. [26]

Porter Brothers began work almost immediately, under the supervision of the SHC engineer, Evarts Blakeslee. By the end of November, the company had its mixing plant set up at the north end of the Tenth Street Bridge site and had poured the northernmost footing. In March of the following year it was pouring forms for the first set of arches. Between 40 to 100 men worked on the construction project at various times in 1919 and 1920. The Tenth Street Bridge (and First Avenue North Bridge) was completed by December 1920, and stood as the largest reinforced concrete structure in the state at the time. [27]

One small deterrent to use of the new bridge remained -- access. The Great Falls Tribune lamented the lack of approaches at both ends, remarking that the bridge was a fine sight, but required a 30-foot ladder to reach its deck. [28] Three months earlier, the city of Great Falls was shocked to learn that the price of the south approach to the Tenth Street Bridge would be

\$40,000-50,000 instead of the \$15,000 estimated in 1917. With its obligation to also build the approaches to the First Avenue North Bridge, the city claimed it could not afford to live up to its agreement. [29] Requests for assistance from Cascade County for construction of the south approach to the Tenth Street Bridge went unheeded. The city finally completed the approach itself. The county had made provisions to build the north approach as part of a 1.3-mile federally-aided project, named Great Falls to Havre, which actually just connected the bridge to the community of Black Eagle. [30]

Under the provision that the Montana Power Company pay for one-fourth the cost of bridge maintenance, the county commissioners granted a franchise for the company's use of the structure for street railway service. Montana Power erected its line on the east side of the bridge, as had been planned during the project design phase. [31] Montana Power and its subsidiary, the Great Falls Street Railway Company, operated its trolley service in Great Falls until December 1, 1931, when buses replaced trolleys for public transportation in the city. [32]

C. Adams and Shanley, Designers

The design of Ralph Adams and George Shanley was selected by Porter Brothers, when the company submitted bids for construction of the First Avenue North and Tenth Street bridges. Ralph Adams was a structural engineer in Spokane, Washington, and George Shanley was a prominent architect in Great Falls. Little is known of Adams, except that he was an agent for the Trussed Concrete Steel Company of Detroit, Michigan (later, Truscan Steel Company). He was first listed in the Spokane city directory in 1912, and continued to be listed until 1924. [33] There is no information available about the circumstances of Adams and Shanley's collaboration on a design for the bridges.

On the other hand, George Shanley's career in Montana, and especially Great Falls, is much better documented. Shanley moved to Montana from Vermont in 1906 or 1907. He worked in Kalispell and Butte until 1909, when he moved to Great Falls to supervise construction of the Rainbow Hotel which he had designed. Thereafter, Shanley made his home in Great Falls, designing numerous outstanding buildings in the city, including the First National Bank Building, Paris Dry Goods Company Building, YMCA Building, Washington School, Cascade County Jail Building, And the city of Great Falls Police and Fire Station. [34]

D. Porter Brothers Company, Builder

The Porter Brothers Company of Spokane was an active and nationally known construction company. Founders John, Richard, and A. R. Porter were Nova Scotians who emigrated to the United States in 1881. The brothers began their lengthy contracting career in 1883 with construction on the Canadian Pacific Railway. Three years later, they moved to Helena, Montana, and worked on construction of a portion of the Montana Central Railway. In 1889, the company built that portion of the Great Northern Railway from "the summit of the Rocky Mountains" to Wenatchee, Washington. Between 1892 and 1894, the company moved to



Spokane, its center of operations for the succeeding years. Porter Brothers Company held numerous and large construction contracts throughout the United States. Projects ranged from railroad construction in Montana, Washington, Oregon, and Michigan to military facilities on the East Coast during World War I. [35]

E. Evarts H. Blakeslee, Resident Supervisor

Evarts H. (Blake) Blakeslee was the resident engineer employed by the Montana State Highway Commission to supervise construction of the two Great Falls bridges. Born in Lake Geneva, Wisconsin, he received an engineering degree from the University of Wisconsin around 1906. Immediately thereafter, he moved to the Bitterroot Valley in Montana, where he was involved in the survey and construction of the Bitterroot Valley Irrigation ditch and flume, a large reclamation project. [36] Around 1918, he moved to Helena to work as an engineer for the SHC. [37] In 1919, Blakeslee was assigned to work on the First Avenue North and Tenth Street bridges.

It was apparently while supervising construction on these projects that he decided to enter the bridge construction business as a contractor. While still employed by the SHC, he purchased the seven iron truss spans of the old First Avenue North Bridge, presumably with the intention of using them at another location(s) at some time in the future. [38] Thus began Blakeslee's lifelong career in the construction business during which time he built between 50 to 60 bridges in Montana and Wyoming. Although locally known as a prominent Great Falls contractor, he was actually one of several medium-sized contractors across the state who built bridges, paved city streets, and laid curb and gutter on various municipal and state projects during the 1920s, 1930s, and 1940s. After World War II, Blakeslee went into the utility construction business almost exclusively, establishing the Utility Builders Company. He continued to be active in the business until his death at the age of 84 in 1967. [39]

### III. DESCRIPTION OF THE TENTH STREET BRIDGE

The Tenth Street Bridge is a multi-span, reinforced concrete, deck arch bridge which crosses the Missouri River in Great Falls, Montana. It stands in the northern section of the city, now one of two bridges which connect Great Falls with numerous rural communities to the north. The bridge consists of eight parabolic, rib-type arches (double ribs) resting on concrete piers and abutments. Each span measures 141 feet 3 inches long. The open spandrel consists of 13 small, narrow, spandrel arches above each span and a solid, narrow panel above each pier. The total structure length is 1,130 feet and the width is 38 feet out-to-out. The roadway is 29 feet 6 inches wide, and once accommodated the tracks of the Great Falls Street Railway Company. The deck is a reinforced concrete slab on concrete beams. A concrete sidewalk is located on the west side of the bridge, between the roadway and the railing. The walk measures 7 feet 6 inches wide and is supported by plain, reinforced concrete corbels. The classically-inspired concrete balustrade railing has solid approach guards with recessed panels at the ends.

The structure remains essentially unaltered since its construction in 1920. The piers, abutments, arches, and balustrade rail remain intact, but the concrete is badly spalled and deteriorated, and sections of the railing have completely disintegrated. W-beam guard rail has been bolted to the inside of the west side

railing and concrete Jersey rail has been placed on either side of the roadway for the length of the bridge. The original light standards and the track used by the Great Falls Street Railway Company have been removed. However, some steel trolley poles still remain along the east side of the bridge.

At the time the Tenth Street Bridge was erected, reinforced concrete arch bridge construction was essentially standardized. The previous two decades saw considerable experimentation with reinforcing systems, such as the Melan, the Kahn trussed bars, and the Luten systems. There was also experimentation with overall design and aesthetics. For long bridges, the barrel arch with one solid arch across the width of the bridge was gradually succeeded by the rib arch, usually consisting of one longitudinal rib on either side of the bridge. Also, concrete arch bridges became more streamlined during this period with a move toward "flattened parabolic curves of narrow ribs, the slender spandrel posts, and the minimal piers." [40] Clearly, the Tenth Street Bridge was a typical design for the post-World War I period, with its rib arch design, parabolic profile, and open spandrel of decorative arches.

There is reason to suspect that the Tenth Street Bridge was built using the Kahn trussed bar system of reinforcing concrete arches. Ralph Adams, the structural engineer who designed the bridge (with George Shanley), was an agent of the Trussed Concrete Steel Company, which was founded by Julius Kahn. [41] Bridge plans do not identify the Kahn design by name, but "trussed bar" were specified for reinforcing steel in part of the bridge. The Kahn bar, patented in 1903, was "a flat bar with the outside edges cut and bent upward to form shear reinforcement." [42]

#### **IV. RECENT HISTORY AND FUTURE OF THE BRIDGE**

As early as 1968, concerns about the safety and adequacy of the Tenth Street Bridge arose. [43] In 1971, the structure was identified as a top priority for replacement by Cascade County and the State of Montana because of its deteriorated condition and low sufficiency rating. [44] The city of Great Falls, Cascade County, and the state were forced to make temporary repairs to the bridge deck in 1975, after the bridge was closed for about one year. When the bridge reopened, the load limit was reduced to 4 tons and has essentially remained restricted to passenger vehicles since that time. In 1986, the city and county escalated efforts to replace the bridge; they appealed to Montana Department of Highways (MDOH) for construction of a new bridge on a slightly different alignment and removal of the 1920 structure. [45]

Several years previous, the Tenth Street Bridge had been determined eligible for listing in the National Register of Historic Places. Under pressure from state and federal agencies and local citizens who were concerned about the loss of a historically significant landmark, MDOH contracted with Atwood-Hinzman of Missoula to undertake an economic feasibility study of the renovation of the structure for pedestrian use as part of the larger Great falls riverfront park system. Although \$500,000 was available for renovation, the study found that an additional \$167,000 would be needed to complete the task. [46] Great Falls commercial artist Rod Mackenzie briefly spearheaded a drive to collect the needed funds, but abandoned the effort after about six months, citing lack of community financial support for the "Save the Bridge" project. [47] When no individual or governmental entity stepped forward to continue the fund-raising campaign, the fate of the Tenth Street Bridge was sealed. Currently, the bridge is scheduled to be demolished in 1995 or 1996, after completion of a new structure at a site immediately upstream.

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## V. ENDNOTES

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1. Department of Agriculture and Publicity, "The Land of Opportunity," (Helena: Independent Publishing Company, 1917), 98.

2. Ibid., 68; Page-Werner & Partners, Historical Research Associates, and James R. McDonald, "Final Report: Historical and Architectural Survey of a Selected Area Within the Great Falls Revitalization District," (Great Falls: For the Cascade County Historical Society, 1984), 3-20 to 3-29.

3. Department of Agriculture and Publicity, "Land of Opportunity," 98.

4. "Cascade County Commissioner's Journal," Book No. 8, 16 June 1916, 200.

5. "Cascade County Golden Jubilee Edition," Great Falls Tribune, 1 August 1937,  
26.

6. "Journal of Council Proceedings, City of Great Falls," Book No. 8, various dates in 1916 and 1917.

7. "Cascade County Commissioner's Journal," Book No. 8, 14 July 1916, 207-208.

8. "Cascade County Commissioner's Journal," Book No. 8, 19 August 1916, 216;  
"Minutes of the State Highway Commission," Book No. 1, 8 and 20 September 1916, 97 and 105-109.

9. "Cascade County Commissioner's Journal," Book No. 8, 16 February 1917, 264; "An Act Relating to Bridges Within Any City or Town ...," Chapter 63, of Laws, Resolutions and Memorials of the State of Montana Passed by the Fifteenth Regular Session of the Legislative Assembly, 1917, approved 1/25/17.

10. "Cascade County Commissioner's Journal," Book No. 8, 17 May 1917, 288. The State Highway Commission (SHC) in its Second Biennial Report (1919-1920) stated that Montana Power paid one-fourth the cost of construction of the Tenth Street Bridge also, but the minutes of the Cascade County commissioners make no reference to such an arrangement. The utility did agree to pay one-fourth the maintenance costs for the two Missouri River bridges, however ("Cascade County Commissioner's Journal," Book No. 9, 31 March 1921, 192). There are no available Montana Power records which can verify or refute the SHC's statement.

11. Polk's Directory of Great Falls and Cascade County for 1913.

12. "Cascade County Commissioner's Journal," Book No. 8, 21 February 1917, 269; 13 April 1917, 281; 12 June 1917, 295; 28 July 1917, 311; 22 August 1917, 324.

13. "Cascade County Commissioner's Journal," Book No. 8, 12 June 1917, 295; Polk's Directory for Great Falls and Cascade County for 1915.

14. "Cascade County Commissioner's Journal," Book No. 8, 28 July 1917, 311.

15. "Width of Bridges Settled by Board," Great Falls Tribune, 23 August 1917, 14.

16. "Journal of Council Proceedings, City of Great Falls," Book No. 8, 6 November 1917, 364; Book No. 9, 13 September 1920, 303. According to the "Cascade County Commissioner's Journal," Book No. 9, 20 April 1921, 201, the cost of overhead crossing of the Great Northern line was apparently to be borne by the railroad company. The record is unclear about whose responsibility it was to construct the underpass at the Milwaukee tracks; "Tenth Street Bridge Approaches Will Need \$50,000 to \$100,000," Great Falls Tribune, 26 December 1920, 7; "Journal of Council Proceedings, City of Great Falls," Book No. 9, 13 September 1920, 303.

17. "Minutes of the State Highway Commission," Book No. 1, 9 February 1918, 161-162.

18. Ibid.

19. Axline, Jon, "Bridges Across the Big Sky: Montana's Historic Highway Bridges," (Helena: Montana Department of Transportation, in preparation).

20. "Cascade County Commissioner's Journal," Book No. 8, 5 February 1918, 381.

21. "Cascade County Commissioner's Journal," Book No. 8, 1 June 1918, 420-425.
22. "Minutes of the State Highway Commission," Book No. 1, 10 June 1918, 172;  
"Cascade County Commissioner's Journal," Book No. 8, 16 September 1918, 456.
23. Ibid.
24. "Cascade County Commissioner's Journal," Book No. 8, 14 April 1919, 523.
25. "Cascade County Commissioner's Journal," Book No. 8, 19 May 1919, 530. Toltz Engineering was paid \$4643.50 for its design of the two bridges, which was significantly more than Adams and Shanley received for their efforts; "Minutes of the State Highway Commission," Book No. 1, 9 February 1918, 163.
26. "Cascade County Commissioner's Journal," Book No. 8, 25 August 1919, 565.
27. "Bridge Plant is Tremendous," Great Falls Tribune, 23 November 1919, 17;  
"With Piers Completed Concrete is being Poured for First Span of Big Bridge Over the Missouri," Great Falls Tribune, 21 March 1920, sec.2, p.3; "Tenth Street Bridge Approaches Will Need \$50,000 to \$100,000," 7; Axline, "Bridges Across the Big Sky," in preparation.
28. Ibid.
29. "City Asks County to Aid in Building Bridge Approaches," Great Falls Tribune, 14 September 1920, 10.
30. Second Biennial Report, State Highway Commission of Montana, 1919-1920 (Helena: Independent Publishing Company, 1920), 65.
31. "Cascade County Commissioner's Journal," Book No. 9, 31 March 1921, 192.
32. The Diamond Jubilee, Inc., Portrait of Progress, Great Falls, Montana, 75 Years (Great Falls: The Diamond Jubilee, Inc., 1959), 47.
33. Nancy Compau, Spokane Public Library, 12 March 1992, Correspondence on file at Renewable Technologies, Inc., Butte.
34. M. Boland Shanley, Interview by Gar Wood, 8 August 1988, Notes on file, Montana State Historic Preservation Office, Helena; Polk's Directory for Great Falls and Cascade County for 1919.
35. "J.D. Porter Dead; Railway Builder." Spokesman Review, 25 February 1926;  
"Richard B. Porter" (obituary), Spokane Daily Chronicle, 23 March 1942.

36. "Great Falls Contractor E.H. Blakeslee Dies," Great Falls Tribune, 18 October 1967, 1-2; Robert Blakeslee, Interview by Mitzi Rossillon, 3 March 1992, Notes on file, Renewable Technologies, Inc., Butte.

37. Polk's Directory of Helena and Lewis and Clark County for 1918.

38. "\$6842 Offered for Iron in Old Bridge across the Missouri," Great Falls Tribune, 11 September 1920, 7.

39. Various Great Falls City Directories from 1923 to 1949; Blakeslee, 3 March 1992; "Great Falls Contractor E.H. Blakeslee Dies," 1-2; Axline, "Bridges Across the Big Sky," in preparation.

40. Robert M. Frame III, "National Register of Historic Places Multiple Property Documentation for Reinforced-Concrete Highway Bridges in Minnesota." In "Final Report of the Minnesota Historic Bridge Survey: Part 2," compiled by Jeffrey A. Hess. (St. Paul: Minnesota Historical Society and Minnesota Department of Transportation, 1988), E3-E5.

41. Ibid., E-2, E-16; Milo S. Ketchum, The Design of Highway Bridges (New York: The Engineering News Publishing Company, 1908), 373.

42. Frame, "Reinforced-Concrete Highway Bridges in Minnesota," E-4.

43. Ardi Aiken, Mayor of Great Falls, to Thomas J. Barnard, Montana Department of Highways, 4 January 1989, Montana State Historic Preservation Office, Helena.

44. Federal Highway Administration, "First Annual Report to Congress, Special Bridge Replacement Program," (Washington, D.C.: bridge Division, Office of Engineering, Federal Highway Administration, 1971), 11.

45. Aiken to Barnard, 4 January 1989. The First Avenue North Bridge was replaced several years earlier.

46. Atwood-Hinzman, Inc., "Pedestrian Rehabilitation Economic Study, 10th Street Bridge, Great Falls, Montana," (Missoula, 1987).

47. Richard Ecke, "Panel Endorses New and Old Bridges," Great Falls Tribune, 28 November 1986; Idem, "Artist Ends Try to Save Bridge," Great Falls Tribune, 14 May 1987.

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